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Section 29 (1)
Regulation 3.1 (2)

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(To be filed before acceptance)

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(T. O'Keefe)

(Signature)

(P.J. O'Keefe)

(Date)

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AU9514898

(12) PATENT ABSTRACT (11) Document No. AU-A-14898/95
(19) AUSTRALIAN PATENT OFFICE

(54) Title
DOOR LATCH

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(57) Claim

1. A door-latching mechanism comprising: a non-magnet unit for fitting into a door surround and containing a magnetically-displaceable member movable between a door-latching position and a door-free position; and, a separate hand-held magnetic actuator movable in a pre-arranged manner in the vicinity of the unit to displace the member between its two positions.

AUSTRALIA

P/00/011 29/591
Regulation 3.2

Patents Act 1990

ORIGINAL
COMPLETE SPECIFICATION
STANDARD PATENT

Invention Title: DOOR LATCH

The following statement is a full description of this invention, including the best method of performing it known to me:-

(See within)

THIS INVENTION relates to a door latch and is more specifically concerned with a door-latching mechanism which holds a door closed until it is required to open it.

Most households with infants fit latches on cupboards and cabinets to prevent the infants from opening them and then playing with their contents. Usually conventional turn-buckle latches are used for this purpose but they are unsightly and also require a hole to be drilled on a visible part of the cabinet frame to receive the fixing screw for the turn-buckle. Other forms of mechanical latch are also available but a child quickly learns how to operate these by studying the actions of its parents when opening the cupboard.

An object of this invention is to provide an improved latching mechanism for holding a door of a cabinet closed.

In accordance with a first aspect of the invention, a door-latching mechanism comprises: a non-magnetic unit for fitting into a door surround and containing a magnetically displaceable member movable between a door-latching position and a door-freed position; and, a separate hand-held magnetic actuator movable in a pre-arranged manner in the vicinity of the unit to displace the member between its two working positions.

In accordance with a second aspect of the invention, a door-latching mechanism comprises: a unit for fitting into a surround of a door aperture at a position at which a magnetically-displaceable latching member in the unit is gravity-biased towards a door-latching position; and, a hand-held magnetic actuator separate from the unit and which, by movement to a pre-arranged position in the vicinity of the unit, displaces the member to a door-freed position magnetically when placed at a predetermined location on the surround.

Preferably the unit comprises an upright plastics tube spanned intermediate its ends by an apertured web and containing a ferromagnetic tappet. The tappet has a stem which extends downwards through the aperture of the web to provide the member, and a head which rests on the upper surface of the web when the actuator is remote from the unit. By placing the actuator on a work-top surface immediately above the unit, the tappet head is attracted upwards and frees the stem from the opening in the door which may then be opened. The hand-held actuator may be provided with a felted under-surface so that it does not scratch the work-top surface with repeated use.

In an alternative arrangement, the member is hinged to the unit and is gravity biased to turn about the hinge towards its door-latching position. The member may be turned in the other direction about the hinge by the magnetic attraction of the actuator when it is required to free the door for opening.

5 The advantage of the invention is that the hand-held actuator can be placed on a shelf above adult-head height, so that a child cannot reach it. Without the actuator, the door cannot be opened. It will be noted that the latching of the door in the closed position is effected without the attachment of unsightly devices to its exposed surfaces, and without blemishes to the exposed surfaces of the door and its surround.

10 The invention will now be described in more detail, by way of example, with reference to the accompanying diagrammatic and informal drawings, in which:

FIGURE 1 is a vertical section through one upper corner portion of a hinged door of a kitchen cabinet held closed by a door-latching mechanism; and,

15 FIGURE 2 is an exploded view showing component parts of the door-latching mechanism of figure 1.

Figure 1 shows a door 1 of a cabinet which is hinged to close, a rectangular vertical aperture 2 beneath a work-top 3.

The closing upright marginal edge of the door 1 is provided in its upper edge, adjacent its upper corner, with an opening 4 in which is held a cup socket 5.

20 The upper side of the surround of the door 1, is provided by a front edge 7 of the underside of a work-top. An upright hole 9 is drilled into the underside of the work-top at a concealed position lying directly above the opening 4. An open-ended tubular plastics unit 11 is fitted into the hole 9 and cemented in position.

25 Figure 2 shows the unit 11 in more detail. It comprises an upright cylinder formed internally with a web 13 which spans horizontally across its intermediate portion and has a central aperture 17. The vertical space above the web 13 is greater than the depth

of the cup socket 5. A ferromagnetic tappet 14 has a circular head 15 which is located above the web 13, as shown in figure 1, and a vertical central stem 16 which extends down through the web aperture 17 and protrudes at its underside beyond the under-surface of the work-top 3 to provide a member for holding the door closed, as shown in figure 1.

A hand-held actuator 18 comprises a plastics block of material covered at its underside by a layer of felt 19 and having a magnet 20 embedded in it. The horizontal dimension of the magnet is substantially larger than the head of the tappet so that, by positioning the actuator block on the work-top 3 above the general position of the unit, the tappet 14 is attracted upwardly and the lower end of its stem 16 lifts out of the cup-socket 5. The door may then be opened.

The above described mechanism is cheap to manufacture and easy to install. It is reliable in operation and cannot be operated without the actuator 18. Thus, by keeping the actuator 18 at a remote location, where small children cannot reach it, unauthorised access to the cupboard is prevented.

Although the invention has been described with reference to a mechanism for fitting above the door, it is within the scope of the invention to have a unit which is fitted in the upright closing jamb forming part of the surround of the door. In this case, the sliding tappet may be replaced by a horizontally-hinged segment having a latching member which fits into an edge opening in the door when the door is closed. The segment is gravity biased to urge the latching member towards its door-latched position. The segment also carries a magnet or armature which turns it towards a door freed position when the actuator is placed in a predetermined position on the door surround. The door may then be opened. The substitution of a hinged latching member for a gravity-operated sliding one, is less attractive commercially as it is more expensive to manufacture and harder to fit.

In some situations it may be desirable to allow the door to be slammed shut, without obstruction from the latching member, when the actuator is not present on the work-top 3. This result may be achieved by providing the lower end of the stem 16 with a rounded under-surface and positioning a shallow ramp surface on the opening side of the cup-socket 5. During terminal movement of the door to its closed position, the underside of the stem 16 rides up the ramp surface and lodges in the socket when the door is in its fully closed position.

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In a further example of the invention, also not illustrated, the latching member comprises a horizontally displaceable, ferromagnetic, slide bolt mounted for axial movement along a plastics smooth-walled tube let into the door surround, and having its axis horizontal. The actuator is provided with a magnet which, by 'wiping' the actuator horizontally in the required direction of movement of the bolt and along the exposed surface of the surround next to the magnet, displaces the bolt magnetically in the required direction to engage, or disengage the latching mechanism, as required.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A door-latching mechanism comprising: a non-magnet unit for fitting into a door surround and containing a magnetically-displaceable member movable between a door-latching position and a door-free position; and, a separate hand-held magnetic actuator movable in a pre-arranged manner in the vicinity of the unit to displace the member between its two positions:

2. A mechanism as claimed in claim 1, in which the member is a horizontally displaceable, ferromagnetic bolt.

3. A mechanism as claimed in claim 1, in which the member is turnable about an axis between its two positions and is gravity-biased towards its door-latching position.

4. A door-latching mechanism comprising: a unit for fitting into a surround of a door aperture at a position at which a ferro-magnetic latching member in the unit is gravity-biased towards a door-latching position, and a hand-held, magnetic actuator separate from the unit, for displacing the member to a door-freed position magnetically when placed at a pre-determined location on the surround.

5. A mechanism as claimed in claim 4, in which the unit comprises a plastics tube spanned in an intermediate portion by an apertured web and containing the latching member which is formed as a tappet having its stem extending through the web aperture and its head larger than the aperture and located on one side thereof.

6. A mechanism as claimed in claim 1, arranged and adapted to operate substantially as hereinbefore described.

7. A mechanism as claimed in claim 4, arranged and adapted to operate substantially as described with reference to the accompanying drawings.

8. A door hinged to close an opening in a surround and arranged to be held in its closed position by a mechanism as claimed in any one of the preceding claims.

Dated this 12th day of March, 1995.

TRICIA O'KEEFE and PETER JOHN O'KEEFE

By:

H.J. Tranter

(Applicant's Patent Attorney)

ABSTRACT

(Figure 1 refers)

A door (1) located beneath an work-surface (7) is held closed by a shank (16) of a ferro-magnetic stud (14) having a head (15) lying above an apertured web (13) spanning across the interior of a plastics tube unit (11) with the shank (14) extending down through the web aperture. To free the door for opening, a hand-held magnetic actuator (18) is placed on top of the work-surface (7). This magnetically attracts the stud (14) upwardly so that its shank (16) is raised out of a socket piece (5) let into the upper edge of the door (1).

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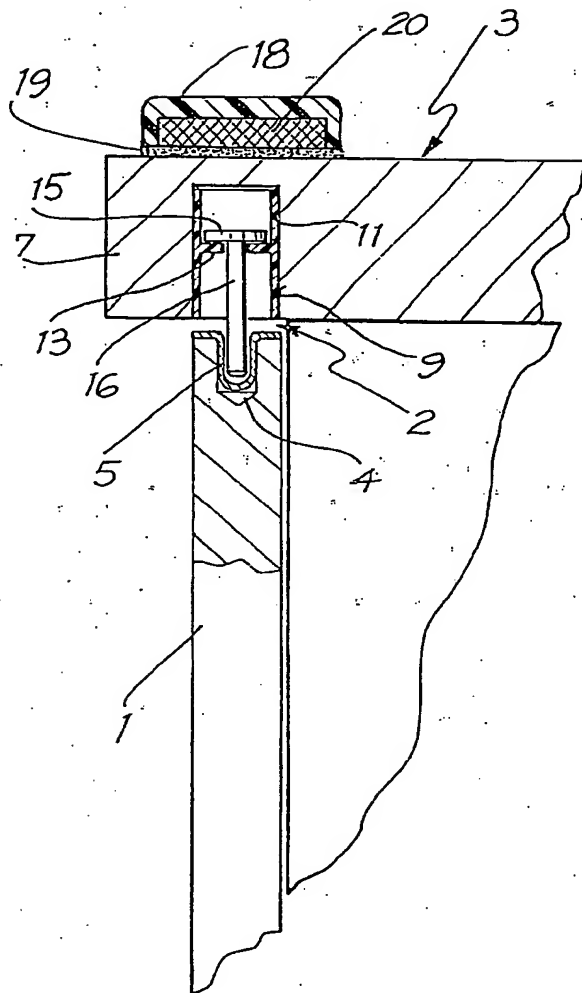


FIG. 1

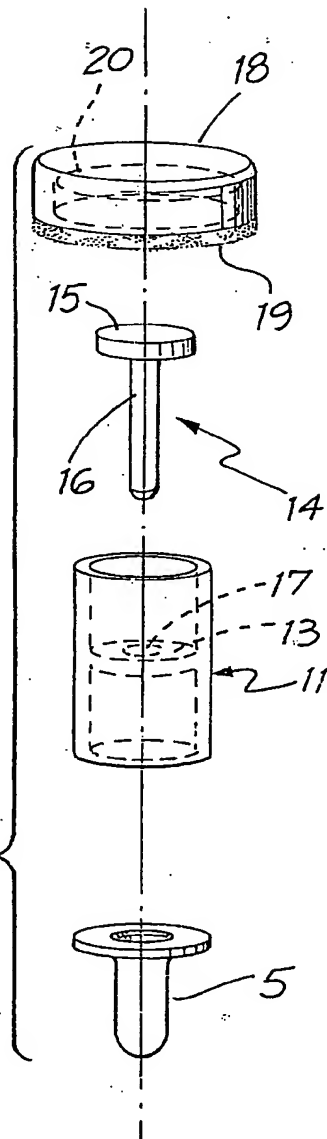


FIG. 2

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